SAND2019-2148C

2019 ARPA-E Energy Innovation Summit

Showcase Submission Information Template

Use this template to prepare your answers for the online Technology Showcase Submission Form. Required fields are identified below with a red asterisk. (*)

Important!

If you are an **ARPA-E awardee directly receiving funding from ARPA-E**, you will be invited to participate, please do **NOT** complete the online application. You will receive an email from the Technology Forums team including your ARPA-E project control number. If you are a subcontractor or prior ARPA-E Awardee, you may complete the application.

Primary Applicant Information

(You will be prompted to enter the information in title case (uppercase and lowercase))

- *First Name: Ryan
- *Last Name: Davis
- Suffix:
- Rank/Title:
- *Organization: Sandia National Laboratories
- Division/Branch:
- *Job Title:
- *Address (City, State, Zip/Postal Code): 7011 East Avenue, Livermore, CA 94550
- *Country: USA
- *Phone Number: (925) 294-4805
- *E-Mail Address: rwdavis@sandia.gov

Submission Details

- * Title: KTF Turf Algae

Additional Details

- *Technology Summary: Describe the technology you are developing and how it works. Has your technology faced any technical challenges and/or developmental milestones? If so, please include. (250 word max)
- Sandia's Turf Algae system provides periodically pulsed, shallow (average ≤ 2 inch), turbulent flow that contribute to the capability of ATS to achieve relatively high productivities with water having lower nutrient concentrations. These include high exposed surface to volume ratio (S/V) of cultivation, turbulence-induced rapid light/dark cycles which improves photon utilization efficiency of the cellular photosynthetic apparatus, and improved nutrient and gaseous exchange and breakup of boundary layer gradient limitations that otherwise exist among the algal turf cellular matrix, water, and atmosphere.

- *Transformational Merit: What is transformational about this technology? How is it different from existing technologies? If available, please include quantitative information about your technology's impact in terms of energy cost, greenhouse gas emissions, economic development, or energy imports. (125 word max)
- The Turf Algae approach uses a simple and scalable open field type system design that takes advantage of nutrients and inorganic carbon (CO2 and carbonate) broadly available in surface waters to reduce the need, logistics, and costs associated with providing commercial nutrients and supplemental CO2 otherwise required using more conventional raceway pond or closed PBR approaches.

- *Purpose for Attending: Describe your purpose for attending the ARPA-E Summit and what you hope to accomplish by exhibiting. (Max 125 words)
- At the ARPA-E Summit, we hope to connect with industry members interested in improved techniques and economics for renewable fuels. We also look forward to the opportunity to interact with attendees and program managers to keep current with trends and technological needs in the energy industry.

- *Exhibit Description: Describe your expected booth exhibit with a particular focus on any demonstration or prototype you plan to bring. (Max 125 words)
  The standard booth exhibit will comprise a poster, some literature, etc.,anything further?

- *Public Summary: Please provide a Technology Summary to be published on the conference website and in the printed program guide. (160 word max)
  Utilization of Turf Algae cultivation to couple remediation of compromised surface waters with biomass production provides a potentially low cost means for preventing non-point source nutrient pollution from being dispersed into the broader environment while generating a renewable energy feedstock.

- *Developmental Status (Choose one from drop-down menu)
  -Technology Prototype
  -Proof of Concept
  -Product Prototype
  -Pilot-Scale Prototype
  -Full-Scale Prototype

- *Application Area: (Choose one from drop-down menu)
  -Advance Fuels
  -Advanced Magnets
  -Building Efficiency
  -Carbon Capture Utilization
  -Control Systems
  -Electricity Transmission & Distribution
  -Energy Storage, Portable
  -Energy Storage, Stationary

-Industrial Efficiency
-Renewable Power Generation
-Thermal Energy Utilization
-Traditional Power Generation
-Vehicle Technologies
-Water
-Other (please state area)

- *Have you participated in the Showcase before?
    - Yes or No

- *Keyword: Enter a number of keywords separated by commas that will help attendees find your organization and technology.
  Algal Biomass, Algae Polyculture Biofuels, BioMass Energy Production